

## Claims

- [c1] 1. A method for calculating mass scores of calcium deposits, the method comprising:  
obtaining patient image data;  
identifying calcium plaque in said patient image data, wherein said calcium plaque is associated with a plurality of discrete patient pixel elements and wherein each of said patient pixel elements includes a patient pixel value expressed in Hounsfield units;  
converting said patient pixel values into patient density values using a calibration curve equation; and  
outputting said patient density values.
- [c2] 2. The method of claim 1 wherein said obtaining patient image data includes obtaining patient image data using a computed tomography imaging system.
- [c3] 3. The method of claim 1 further comprising:  
summing said patient density values resulting in a total mass score; and  
outputting said total mass score.
- [c4] 4. The method of claim 3 wherein said total mass score includes said patient density values for one vessel within a heart.
- [c5] 5. The method of claim 3 wherein said total mass score includes said patient density values for all vessels within a heart.
- [c6] 6. The method of claim 1 wherein said identifying includes:  
manually selecting said discrete patient pixel elements containing calcium plaque; and  
highlighting said patient pixel elements that meet a preselected threshold criteria and a preselected connectivity criteria.
- [c7] 7. The method of claim 6 wherein said preselected threshold criteria includes patient pixel elements with patient pixel values measuring 130 Hounsfield units or greater.
- [c8] 8. The method of claim 1 wherein said calibration curve equation is

precomputed.

- [c9] 9. The method of claim 1 further comprising precomputing said calibration curve equation, wherein said precomputing includes:  
obtaining phantom image data associated with a plurality of discrete phantom pixel elements corresponding to a calcium insert of known density in a phantom, wherein each of said phantom pixel elements includes a phantom pixel value expressed in Hounsfield units;  
graphing said phantom image data against said known density of said calcium insert; and  
developing said calibration curve equation for computing said patient density values in response to said patient pixel values.
- [c10] 10. The method of claim 9 wherein said phantom includes a poly phantom and a calibration phantom.
- [c11] 11. The method of claim 10 wherein said poly phantom approximates a medium sized patient.
- [c12] 12. The method of claim 10 wherein said poly phantom approximates a large sized patient.
- [c13] 13. The method of claim 10 wherein said calibration phantom includes three calcium inserts of known density.
- [c14] 14. The method of claim 13 wherein said calcium inserts of known density are 50, 100 and 200 milligrams per cubic centimeter.
- [c15] 15. The method of claim 9 wherein said phantom is an anthropomorphic cardiac phantom body including calcium inserts of known density.
- [c16] 16. A method for calculating mass scores of calcium deposits, the method comprising:  
creating a calibration curve equation, wherein said creating includes:  
obtaining phantom image data associated with a plurality of discrete phantom pixel elements corresponding to a calcium insert of known density in a phantom, wherein each of said phantom pixel elements includes a phantom

pixel value expressed in Hounsfield units;  
graphing said phantom image data against said known density of said calcium insert; and  
developing said calibration curve equation for computing said patient density values in response to patient pixel values;  
obtaining patient image data;  
identifying calcium plaque in said patient image data, wherein said calcium plaque is associated with a plurality of discrete patient pixel elements and wherein each of said patient pixel elements includes a said patient pixel value expressed in Hounsfield units;  
converting said patient pixel values into patient density values using said calibration curve equation; and  
outputting said patient density values.

[c17] 17. A system for calculating mass scores of calcium deposits, the system comprising:  
an imaging system;  
an object disposed so as to be communicated with said imaging system, wherein said imaging system generates image data responsive to said object; and  
a processing device in communication with said imaging system including software to implement the method comprising:  
obtaining said image data;  
identifying calcium plaque in said image data, wherein said calcium plaque is associated with a plurality of discrete pixel elements and wherein each of said pixel elements includes a pixel value expressed in Hounsfield units;  
converting said pixel values into density values using a calibration curve equation; and  
outputting said density values.

[c18] 18. The system of claim 17 wherein said object is a patient.

[c19] 19. The system of claim 17 wherein said imaging system is a computed tomography imaging system.

- [c20] 20. The system of claim 17 wherein said imaging system and said processing device are physically located in the same geographic location.
- [c21] 21. The system of claim 17 wherein said imaging system and said processing device are physically located in different geographic locations.
- [c22] 22. The system of claim 17 wherein said processing device is in communication with said imaging system over a network.
- [c23] 23. The system of claim 22 wherein said network is the Internet.
- [c24] 24. A computer program product for calculating mass scores of calcium deposits, the product comprising:  
a storage medium readable by a processing circuit and storing instructions for execution by the processing circuit for:  
obtaining patient image data;  
identifying calcium plaque in said patient image data, wherein said calcium plaque is associated with a plurality of discrete patient pixel elements and wherein each of said patient pixel elements includes a patient pixel value expressed in Hounsfield units;  
converting said patient pixel values into patient density values using a calibration curve equation; and  
outputting said patient density value.
- [c25] 25. A computer program product for calculating mass scores of calcium deposits, the product comprising:  
a storage medium readable by a processing circuit and storing instructions for execution by the processing circuit for:  
creating a calibration curve equation, wherein said creating includes:  
obtaining phantom image data associated with a plurality of discrete phantom pixel elements corresponding to a calcium insert of known density in a phantom, wherein each of said phantom pixel elements includes a phantom pixel value expressed in Hounsfield units;  
graphing said phantom image data against said known density of said calcium insert; and

developing said calibration curve equation for computing said patient density values in response to patient pixel values;  
 obtaining patient image data;  
 identifying calcium plaque in said patient image data, wherein said calcium plaque is associated with a plurality of discrete patient pixel elements and wherein each of said patient pixel elements includes a said patient pixel value expressed in Hounsfield units;  
 converting said patient pixel values into patient density values using said calibration curve equation; and  
 outputting said patient density values.